

STRIKE ZONE TRAINER

[0001] This application claims the benefit of priority of United States Provisional Patent Application Serial No. 60/395,599, which was filed on July 15, 2002, the contents of which are incorporated by reference in their entirety.

Field of the Invention

[0002] The field of the present invention relates to an apparatus that assists in training coaches, pitchers, umpires, and batters, among others, to master the strike zone associated with baseball and softball.

Background of the Invention

[0003] In major league baseball, the “strike zone” is defined as a rectangular area over home plate. The upper limit of the strike zone is a horizontal line at the midpoint between the top of the batter’s shoulders and the top of the batter’s uniform pants. The lower end of the strike zone is a line at the hollow beneath the batter’s kneecap. The strike zone is established by the batter's stance as the batter prepares to swing at a pitched ball.

[0004] Since the strike zone is bounded on either lateral side by the dimensions of home plate, it is noteworthy to recite those dimensions. Home plate is a five sided polygon, 17 inches by 8 ½ inches by 8 ½ inches by 12 inches by 12 inches, cut to a point at the rear. Since home plate is 17 inches wide, the strike zone is also 17 inches wide.

[0005] With this in mind, for major league baseball, the strike zone has a fixed 17 inch width, but the vertical dimension of the strike zone changes from batter to batter. The vertical size of the strike zone is dependent upon the size of the batter as well as the stance selected by

the batter. A small batter with a low stance will, understandably, have a smaller strike zone than a taller batter with a more vertical stance.

[0006] While this definition of the strike zone applies to major league baseball, those skilled in the art would understand that the strike zone is largely the same for fast pitch softball, slow pitch softball, minor league baseball, and little league baseball, to name but a few of the types of ball games where the strike zone is used. While the definition of the strike zone is largely uniform from one ball sport to another, there may be variations from one league to another. In some instances, the strike zone is officially a different size. In other instances, the strike zone is unofficially different. One example of the latter example is little league baseball, where the strike zone often may be more favorably interpreted in favor of the children who participate in the sport.

[0007] Regardless of the type of ball game or the league, in the games of baseball, fast-pitch softball, and slow-pitch softball, among others, the ability to train a pitcher to pitch within a batter's strike zone is important to a pitcher's development and continued success. For example, it may be desirable for a pitcher to learn different techniques for pitching within a particular portion of the batter's strike zone.

[0008] Similarly, it is important to train umpires to recognize when a pitch is within a player's strike zone. It is equally important to train all umpires according to the established standard so that individual umpires will be more accurate in their calls of "strikes" or "balls." This facilitates uniformity between different games monitored by different umpires.

[0009] Equally important is the batter's appreciation for his or her own strike zone to improve his or her batting performance at home plate. To this end, if the batter is very familiar with his or her own strike zone, he or she may practice hitting, especially those pitches that are directed at a weak area of the batter's strike zone, *e.g.*, those where the batter is less likely to hit the ball.

[0010] Coaches also can benefit from an appreciation of a batter's strike zone. In particular, having gained a greater appreciation of a batter's strike zone, the coach may be able to provide better assistance to a particular batter to improve his or her performance.

[0011] Despite this need to facilitate training and practice, the public has not had access to equipment that can help coaches, pitchers, umpires and batters gain a greater appreciation of the strike zone.

[0012] Accordingly, there is a need for such sports equipment.

Summary of Invention

[0013] It is, therefore, an object of the present invention to provide a simple, cost-effective, tool to train coaches, pitchers, umpires, and batters to recognize a batter's strike zone.

[0014] In particular, it is one aspect of the present invention to provide umpires with a simple, cost-effective tool that the umpires may use to become more familiar with the size of the strike zone. In this manner, the umpire's calls in a particular game will be more consistent with the rule book definition of the "strike zone." In addition, improved, uniform training about the strike zone for umpires helps to reduce instances of variability from game to game between different umpires when officiating at a game by calling "strikes" or "balls."

[0015] It is also an aspect of the present invention to provide a simple, cost-effective apparatus to assist a pitcher in recognizing a batter's strike zone so that the pitcher may improve his or her pitching techniques and accuracy. In connection therewith, it is another aspect of the invention to provide a training and practice tool where a pitcher may be able to improve his or her accuracy in pitching to a particular portion of the batter's strike zone.

[0016] Next, it is an aspect of the invention to provide a simple, cost-effective apparatus to assist a batter in improving his batting performance by improving his or her appreciation of his or her own strike zone.

[0017] It is also an aspect of the present invention to provide a tool to assist coaches in providing training and practice assistance to the members of the teams that they coach by providing coaches with a greater understanding of the strike zones of individual players. Moreover, with the apparatus of the present invention, coaches may help players to improve their stance when at home plate, preparing to bat.

[0018] Accordingly, one aspect of the present invention provides a strike zone trainer that includes a bottom horizontal member, a left vertical upright connected at a left side of the bottom horizontal member, a right vertical upright connected at a right side of the bottom horizontal member, and a top horizontal member connecting top portions of the left and right vertical uprights together. The bottom horizontal member, the left vertical upright, the right vertical upright, and the top horizontal member define a frame surrounding a strike zone for a batter. The trainer further includes a left indicator indicating a left edge of the strike zone and a right indicator indicating a right edge of the strike zone. The left and right indicators define the strike zone's width. The trainer also includes a top indicator indicating a top edge of the strike zone and a bottom indicator indicating the bottom edge of the strike zone. The top and bottom indicators define the strike zone's height.

[0019] Another aspect of the present invention is to provide a strike zone trainer where at least one of the top and bottom indicators may be moved to adjust the strike zone's height.

[0020] Still another aspect of the present invention is to provide a strike zone trainer where the left and right indicators are strings extending between the top and bottom horizontal members and the top and bottom indicators are strings extending between the left and right vertical uprights.

[0021] One further aspect of the present invention is to provide a strike zone trainer that also includes a plurality of eyelets disposed on the top and bottom horizontal members and the left and right vertical uprights. The strings each extend between two eyelets.

[0022] An additional aspect of the present invention is to provide a strike zone trainer where the top horizontal member and the left and right uprights are made from plastic piping.

[0023] Another aspect of the present invention is to provide a strike zone trainer where the plastic piping is made from polyvinylchloride.

[0024] One further aspect of the present invention is to provide a strike zone trainer where the bottom horizontal member is made from wood.

[0025] Another aspect of the present invention is to provide a strike zone trainer that also includes a left bracket connected at the left side of the bottom horizontal member, and a right bracket connected at the right side of the bottom horizontal member. The left bracket is adapted to receive the left vertical upright and the right bracket is adapted to receive the right vertical bracket.

[0026] A further aspect of the present invention is to provide a strike zone trainer where at least one of the width and height of the strike zone is adjustable by moving one or more of the strings.

[0027] In another aspect of the present invention, a strike zone trainer is provided that includes a plurality of pairs of electromagnetic radiation emitters and sensors disposed on the top and bottom horizontal members and the left and right vertical uprights, establishing a grid of electromagnetic beams therebetween.

[0028] In still another aspect of the present invention, a strike zone trainer is provided where the top and bottom and left and right indicators are individual electromagnetic beams.

[0029] One additional aspect of the present invention provides a strike zone trainer where at least the top and bottom indicators may be moved to other electromagnetic beams to adjust the strike zone's height.

[0030] Another aspect of the present invention provides a strike zone trainer that has at least one input device is operatively connected to the trainer to adjust the strike zone's height. The input device may be a keyboard, a mouse, or an electromagnetic radiation emitter.

[0031] One further aspect of the present invention provides a strike zone trainer having a speaker operatively connected to the trainer to provide an audible indication if a ball passes through one or more of the electromagnetic beams in the strike zone.

[0032] Another aspect of the present invention provides a strike zone trainer with a monitor operatively connected to the trainer to provide a visual indication of where a ball passes through one or more of the electromagnetic beams.

[0033] Still another aspect of the present invention provides a strike zone trainer including a plurality of visual indicators positioned on the top and bottom horizontal members and the left and right vertical uprights. The visual indicators may be lights. Selected ones of the plurality of visual indicators may be used to indicate the left, right, top, and bottom edges of the strike zone. Moreover, selected ones of the visual indicators may indicate where a ball passes through one or more of the electromagnetic beams.

[0034] Other aspects of the present invention will be made apparent from the disclosure that follows.

Brief Description of the Drawings

[0035] Reference will be made hereinafter to the accompanying drawings, which illustrate embodiments of the present invention discussed herein, wherein:

[0036] FIG. 1 is a front elevational view of one embodiment of the strike zone trainer of the present invention;

[0037] FIG. 2 is a top plan view of the approximate position of one possible orientation of the strike zone trainer illustrated in FIG. 1 when used on a baseball or a softball field;

[0038] FIG. 3 is a perspective illustration of the left hand mounting structure of the strike zone trainer illustrated in FIG. 1;

[0039] FIG. 4 is a cross-sectional top view, taken along the line 4-4 in FIG. 3, further illustrating the construction of the left hand mounting structure of the strike zone trainer illustrated in FIG. 1;

[0040] FIG. 5 is a front elevational view of another embodiment of the strike zone trainer of the present invention; and

[0041] FIG. 6 is a perspective illustration of still another embodiment of the strike zone trainer of the present invention.

Detailed Description of the Preferred Embodiments

[0042] FIGS. 1-4 illustrate one of the embodiments of the present invention. Within the discussion that follows, other variations of this embodiment will be described. It should be understood that the strike zone trainer 10 of the present invention is not limited solely to the embodiments illustrated. To the contrary, it is contemplated that the scope of the present invention is considerably broader than the embodiments described herein, as recited by the claims appended hereto.

[0043] Referring to FIG. 1, the strike zone trainer 10 of the present invention includes a left vertical upright 12, a right vertical upright 14, a top horizontal member 16, and a bottom horizontal member 18. In this embodiment, the two uprights 12, 14 and the two horizontal members 16, 18 are connected to one another to define a rectangular area 20 that surrounds a batter's strike zone.

[0044] In the illustrated embodiment, the height H of the trainer 10 is preferably about six feet (6 ft. or 182.88 cm.) and the width W is preferably about nine feet (9 ft. or 274.32 cm.). These dimensions are not critical to the operation and functioning of the present invention, but

are provided as an example of one possible size for the trainer 10 of the present invention. It is contemplated that the height H and the width W could be varied to be greater or smaller, depending upon the particular circumstances associated with its use. For example, the six and nine foot dimensions were selected specifically with an adult in mind. Moreover, the dimensions were selected for a standard ball field, whether a standard baseball field or a standard softball field, which differ from one another in size. However, it is contemplated that if the trainer 10 is used with young adults or children, the trainer 10 may be constructed to be smaller in size. Moreover, if the trainer is to be used in a batting cage or other similarly confined area, the dimensions may be made smaller so that the trainer 10 will fit in the smaller space.

[0045] Having said this, the six foot height and the nine foot width are preferred because the uprights 12, 14 and the top and bottom horizontal members 16, 18 are sufficiently spaced from one another that they do not interfere with the field of vision of the pitcher, batter, coach, or umpire, among others. If the vertical uprights 12, 14 and the top and bottom horizontal members 16, 18 are made to be too close together, there is an increased likelihood that a ball might impact one of these supports, interfering with the operational purpose of the trainer 10.

[0046] Referring to FIG. 2, the trainer 10 of the present invention is shown in its training position in front of home plate 22. Batter's boxes 24, 26 are also illustrated on either side of home plate 22. For purposes of understanding the orientation of the trainer 10 on the baseball (or softball) field, directions to first base, to the pitcher's mound, and to third base are indicated. The relative position of the trainer 10 in FIG. 2 is approximate only. It is contemplated that the trainer 10 will be placed sufficiently far in front of home plate 22 so that a batter will not strike the trainer 10 with his or her bat during batting practice. Naturally, depending on the age and experience of the batter, the trainer 10 may be placed closer to or further from home plate 22 as needed or desired.

[0047] Alternatively, it is contemplated that the trainer 10 could be placed behind the batter, behind home plate 22. In this position, a user may assess the pitch from behind home plate 22. In other words, if the trainer 10 is placed behind home plate 22, an umpire, coach, or other type of user may stand behind the trainer 10. In this orientation, the batter would not see if the pitch was a “strike” or a “ball,” but would have to rely on the observer for this information.

[0048] Also depicted in FIG. 2 is the width HP of home plate 22, which is 17 inches (17 in. or 43.18 cm.), as mentioned above. As discussed in greater detail below, the width HP of home plate 22 should align closely with the width SZ of the strike zone defined by the strike zone trainer 10. It is preferred that $HP = SZ$. In other words, it is preferred that the width of the strike zone also be 17 inches, to accurately define the width of the strike zone.

[0049] However, it is contemplated that a coach, batter, or pitcher may wish to narrow the width SZ of the strike zone for training purposes. In such a case, the width HP of home plate 22 will be greater than the width SZ of the strike zone. In other words, $HP > SZ$. Alternatively, for practice, it may be desired to expand the width SZ of the strike zone. In such a case, $HP < SZ$.

[0050] In the embodiment illustrated, the vertical uprights 12, 14 and the top horizontal member 16 preferably are made of a plastic pipe material, such as polyvinylchloride (“PVC”) piping of the type that is commonly available in a hardware or home improvement store. In particular, it is contemplated that the PVC piping used to construct the strike zone trainer 10 have a diameter of one inch (1 in. or 2.54 cm.).

[0051] In the illustrated embodiment, the left vertical upright 12 connects to the left hand side of the top horizontal member 16 via a first elbow connector 28. Similarly, the right hand side of the top horizontal member 16 connects to the top of the right vertical upright 14 via a second elbow connector 30. In the illustrated embodiment, the elbows 28, 30 also are made of

a suitable plastic material, such as PVC, and have a suitable inside diameter to matingly engage the uprights 12, 14 and the top horizontal member 16.

[0052] As would be appreciated by those skilled in the art, however, the uprights 12, 14 the top horizontal member 16, and the elbows 28, 30 need not be constructed from PVC piping. Any other suitable plastic, such as polyethylene, high density polyethylene (“HDPE”), low density polyethylene (“LDPE”), ultra high molecular weight polyethylene (“UMHWPE”), polypropylene, polystyrene, polycarbonate, nylon, polymethylmethacrylate, polypropylene, polyester, kevlar, polyacrylonitrile, and polyurethane, may be used without departing from the scope of the present invention. Similarly, materials other than plastics, such as cellulose and composite materials, may also be used.

[0053] In addition, as would be appreciated by those skilled in the art, still other materials may be substituted for the construction of the uprights 12, 14, the top horizontal member 16, and the elbows 28, 30. For example, it is contemplated that these members 12, 14, 16, 28, and 30 may be made of wood, steel, copper, aluminum, carbon fiber composite, or other natural or synthetic material that provides suitable strength and durability.

[0054] Having said this, it is preferred that the materials selected for the construction of the uprights 12, 14, the top horizontal member 16, and the elbows 28, 30 be of a light weight material so that the trainer may be easily transported from one location to another. This facilitates movement of the trainer 10 in front of home plate 22. It also facilitates removal of the trainer 10 from the playing field, when it is not needed for training. In addition, a light weight construction facilitates storage of the trainer 10, especially when the trainer 10 is constructed to be collapsed when not in use.

[0055] Next, it is contemplated that the uprights 12, 14, the top horizontal member 16, and the elbows 28, 30 need not be cylindrical in cross-section. As would be appreciated by those

skilled in the art, any suitable cross-section may be used instead, including, for example, ellipsoidal, rectangular, triangular, L-shaped, U-shaped, or otherwise.

[0056] As may be appreciated from the embodiment illustrated in FIG. 1, the bottom horizontal member 18 differs in its construction from the top horizontal member 16. In particular, in the embodiment illustrated, the bottom horizontal member 18 is made from a standard 2" x 4" ("two by four") wood board. As would be appreciated by those skilled in the art, however, the bottom horizontal member 18 may be made alternatively from any of the materials contemplated for the top horizontal member 16 without deviating from the scope of the present invention.

[0057] The bottom horizontal member 18 has a left hand bracket 32 connected at its left hand side and a right hand bracket 34 connect at its right hand side. FIGS. 3 and 4 illustrate the construction of the left hand bracket 32 in greater detail. As would be appreciated by those skilled in the art, the right hand bracket 34 shares the same construction (albeit, with a construction that is a mirror image of the left hand bracket 32) and will not be elaborated upon further.

[0058] Referring to FIG. 3, the left hand bracket 32 includes a vertical support portion 36. Preferably, the vertical support portion 36 is a 2 x 4 piece of wood that has been attached to the bottom horizontal member 18 via one or more nails. As would be appreciated by those skilled in the art, however, the vertical support portion 36 and the bottom horizontal member 18 may be attached to one another via any other suitable fasteners such as screws or adhesives.

[0059] As shown in FIGS. 3 and 4, first and second U-bolts 38, 40 are secured to the vertical support portion 36 at first and second respective heights above the top surface of the bottom horizontal member 18. The U-bolts 38, 40 extend through the vertical support portion 36 and are secured thereto via bolts 42, 44, which are illustrated in FIG. 4. To accommodate

the one inch diameter PVC pipe that forms the left vertical upright 12, the U-bolts 38, 40 preferably have a diameter of one inch (1 in. or 2.54 cm.).

[0060] Preferably, the U-bolts 38, 40 are tightened so that they secure the vertical uprights 12, 14 therein. However, as would be appreciated by those skilled in the art, the U-bolts 38, 40 need not be so tightly secured to discourage disengagement of the vertical uprights 12, 14 from the bottom horizontal member 18. To the contrary, one alternative embodiment of the strike zone trainer 10 of the present invention contemplates that the vertical uprights 12, 14 are easily removed from the U-bolts 38, 40. This facilitates deconstruction of the trainer 10, if it is necessary to take the trainer 10 apart for storage, for example.

[0061] In the illustrated embodiment, the bottom horizontal member 18 and the left and right brackets 32, 34 are made of wood for several reasons. First, using wood as a base provides the trainer 10 with a weighted bottom, which helps to keep the trainer 10 stable when placed in front of home plate 22. In addition, it is a simple, cost-effective material for the construction of the trainer 10. While wood is the preferred material for the bottom horizontal member 18 and the vertical support portions 36, any other suitable material may be selected without deviating from the scope and spirit of the present invention. So as not to repeat the discussion above, the bottom horizontal member 18 and the vertical support portions 36 may be constructed on the same material as the vertical uprights 12, 14 and the top horizontal member 16. In addition, the bottom horizontal member 18 and the vertical support portions 36 may have any suitable cross-section.

[0062] FIG. 5 illustrates another embodiment of the trainer 10 of the present invention. In this embodiment, the bottom horizontal portion 18 is provided with several feet 46, 48, 50, 52. the feet extend from the front and rear of the bottom horizontal portion 18 and provide additional stability for the trainer 10. The feet 46, 48, 50, 52 are preferably constructed from

wood. However, as mentioned above, any other suitable material may be substituted therefor without departing from the scope and spirit of the present invention.

[0063] Returning to FIG. 1, the interior surfaces of the uprights 12, 14 and the horizontal member 16, 18 are provided with a plurality of eyelets 54. As illustrated, some of the eyelets are connected to one another via strings 56, 58, 60, 62. The strings 56, 58, 60, 62 act as both physical and visual indicators that separate the rectangular area 20 into nine separate regions I-IX.

[0064] As may be appreciated from FIG. 1, the strings 56 and 58 define the lateral sides of the strike zone V. Since they are positioned from one another the distance SZ equal to the width of home plate 22, they are 17 inches apart from one another. As would be appreciated by those skilled in the art, the distance SZ may be varied, depending on the particular application of the trainer 10, and still remain within the scope of the present invention. For example, it is contemplated that the trainer could be used for little league players, where the rules concerning the strike zone V may be more lenient. Moreover, with small children, coaches may want to restrict the strike zone V to have a smaller width until the children have gained sufficient coordination, whereupon, the width SZ of the strike zone V may be increased to professional dimensions.

[0065] Strings 60, 62 define the upper and lower limits of the strike zone V. Since the upper and lower limits of the strike zone V are defined by the particular batter, a plurality of eyelets 54 are provided on the interior surface of the trainer 10 so that the strings 60, 62 may be moved to accommodate different batters. While discrete positions are defined by the eyelets 54 in this example, it is contemplated that the trainer 10 may be provided with holes permitting infinite variability. For example, the strings 60, 62 may be arranged so that they pass through vertical slots and be held in place on the trainer via a clamp or other suitable fastener.

[0066] During training, the trainer 10 preferably is positioned in from of home plate 22 as indicated in FIG. 2. When the ball is thrown by the pitcher, if the ball passes through the strike zone V, it will be considered by the batter, umpire, coach, etc. as a strike. This is true even if the ball grazes one of the strings 56, 58, 60, 62 but still passes through the strike zone V.

[0067] The strings 56, 58, 60, 62 preferred for this embodiment of the trainer 10 can be made of any suitable material such as metal wire, twine, yarn, ribbon, rope, etc. The particular material that comprises the string is not relevant to the operation of the trainer 10. All that is relevant is that the strings 56, 58, 60, 62 define the regions I-IX in a manner that the regions I-IX be visibly identified from a distance. Accordingly, it is contemplated that the strings 56, 58, 60, 62 will be brightly colored. For example, the strings 56, 58, 60, 62 may be treated with a fluorescent color. Alternatively, the strings may be white, so that they may be easily distinguishable from the background.

[0068] It is noted that each of the regions other than the strike zone V define areas in the trainer 10 where, if a ball passes therethrough, the pitch will be called a "ball." For example, regions I and III are "high and outside." Regions VII and IX are "low and outside." Regions IV and VI are "wide." Region II is "high." Finally, region VIII is "low."

[0069] FIG. 6 illustrates a further embodiment of the present invention, trainer 100. Trainer 100 includes a frame 102 with left, right, top, and bottom members 104, 106, 108, 110. So that the frame 102 is held upright in a stable fashion, feet 112, 114 may also be provided thereon.

[0070] Trainer 100 has the same basic training function as trainer 10. However, the operation of the trainer 100 is electronically based. In this embodiment, photoelectric emitters and sensors 116 are embedded in the frame 102 to sense the passage of a ball therethrough. As would be appreciated by those skilled in the art, the photoelectric emitters and sensors 116

should be arranged so that emitters and sensors 116 are disposed on opposite sides of the frame from one another. The emitters 116 may emit any type of electromagnetic radiation that will be disrupted should an object, such as a baseball, pass therethrough.

[0071] As illustrated in FIG. 6, the photoelectric emitters and sensors 116 are embedded in a regular repeating fashion on each of the frame members 104, 106, 108, 110. The emitters and sensors 116 are disposed close enough to one another to create a grid of electromagnetic beams 118 with openings between the beams 118 that are smaller than the diameter of a baseball. Accordingly, no matter where the baseball passes through the frame 102, the baseball will break at least two of the electromagnetic beams 118 (one horizontal and one vertical beam 118) and will, therefore, be detected by the operating system of the trainer 100.

[0072] While the preferred embodiment of the trainer 100 relies on the breaking of both a horizontally-oriented and a vertically oriented electromagnetic beam 118, it is possible that the trainer 100 may be constructed so that the location where the ball passes through the frame may be detected by a single beam 118. Moreover, the beams need not be oriented in vertical and horizontal directions to permit detection of the ball.

[0073] Since this embodiment of the trainer 100 does not permit an immediate visual assessment of the region I-IX through which the baseball or softball passes, the trainer 100 may be provided with one or more speakers 120 that provide an audible indication concerning whether or not the pitch was a strike or a ball. The speaker 120 on the trainer 100 may be programmed to emit one type of audible signal for a strike and another for a ball. Alternatively, the trainer 100 may be designed to produce an audible signal when the pitch is a strike but produce no sound if the pitch falls outside of the strike zone. As would be appreciated by those skilled in the art, the reverse is also contemplated to fall within the scope of the invention. In other words, the trainer 100 may be programmed to produce an audible signal when the pitch is a ball, but remain silent when the pitch passes through the strike zone.

[0074] In still another alternative construction of the trainer 100, a visual display monitor 122 may be connected to the trainer 100. The monitor 122 may be provided with a display that provides graphical information about the pitch. For example, the monitor 122 may display the nine regions I-IX that define the strike zone and non-strike zone areas through which a baseball or softball may pass. When the ball breaks two or more of the beams 118, the trainer 100, through a computer or other type of processor (not shown), detects the region through which the ball passed and provides a visual indication of that region to the user, whether it be the pitcher, umpire, coach, batter, or other players, for example. In this manner, the user can access immediately the trainer's detection of whether or not the ball passed through the strike zone V.

[0075] As indicated above, it is contemplated that a computer, CPU, or other type of electronic processor will be incorporated into the trainer 100 (or connected thereto) to assess the input information and provide output. The input is the passage of a ball through the grid of beams 118 that are established within the trainer 100, once operational. To provide power to the trainer 100, the trainer may be provided with a power source 124 that may include a plug 126 or, alternatively, may include one or more batteries 128.

[0076] To provide other types of input to the trainer, a keyboard 130 or other input device, such as a mouse 132 or infrared emitter 134 may be operationally connected to the trainer. If an electromagnetic radiation transmitter 134 provides input, the trainer 100 naturally will be equipped with an electromagnetic radiation sensor 136 thereon to detect the inputted information. In the preferred embodiment, the electromagnetic radiation transmitter 134 and sensor 136 transmit and receive infrared signals, for example. Each of these input devices are useful because they may be designed to provide information concerning the height of the strike zone, among other types of information.

[0077] With trainer 10 discussed above, the strings 60, 62 are moveable to the plurality of eyelets 54 disposed thereon. The strings 60, 62 are designed to be moved to adjust for variances in the height and stance of the batter. Similarly, with the trainer 100, the height of the strike zone preferably should be easily adjustable. To make this adjustment, the trainer 100 is provided with one or more input devices to make an electronic adjustment of the strike zone.

[0078] It is contemplated that the trainer 100 may be programmed with information concerning the strike zones of individual players. Accordingly, when a batter steps up to home plate, his name may be inputted (or selected from a menu) and the appropriate dimensions for the strike zone V will be automatically selected and set by the trainer 100. It is also contemplated that the trainer may have a set menu of different strike zones V that a batter may select to improve his or her batting skills.

[0079] In still another embodiment, the trainer 100 may be provided with one or more visual indicators 138 on the frame 102 thereof. The visual indicators 138 may be provided on both the front side and the rear side of the frame 102, as desired. In FIG. 6, the visual indicators are lights 138, such as Light Emitting Diodes (“LEDs”) that are incorporated into the front of the frame 102, which is the side facing the batter. If so equipped, the trainer may operate as follows.

[0080] The lights 138 may be programmed to light up so that they indicate approximately the location through which the pitch passes through the frame 102. In this arrangement, the user, whether an umpire, coach, pitcher, batter, or other player, will make a visual assessment of whether or not the baseball or softball passed through the strike zone. Alternatively, the visual indicators 138 may be lit to indicate the lateral and upper and lower edges of the strike zone so that the user can visually assess whether the ball passed through the strike zone.

[0081] In still another embodiment, the visual indicators may be used to provide both types of information. For example, some of the lights 138 may be lit continuously to indicate the location of the strike zone. When a ball passes through the frame 102, others of the lights 138 may then be illuminated for a brief period of time to indicate the region I-IX through which the ball passed. The visual indicators may be used in combination with an audible or visual indication (a speaker 120 or monitor 122) so that the user may quickly determine if the ball passed through the strike zone.

[0082] Regardless of whether trainer 10 or trainer 100 (or any variations or equivalents thereof) is utilized, the trainer 10, 100 is designed for educational purposes. As indicated above, the trainer 10, 100 is designed to assist pitchers to improve their pitching, umpires to improve their umpiring, batters to improve their batting, and coaches to assist with each of these educational purposes. As would be appreciated by those skilled in the art, the trainer 10, 100 may be used for other purposes not enumerated herein. Those uses, however, are intended to be encompassed by the scope of this invention.

[0083] With the trainer 10, 100, coaches can help pitchers to work on pitching the ball through a particular region I-IX, either through or around the strike zone, which is region V. Pitchers may use the trainer 10, 100 together with catchers to improve their collective performance on the field. In this particular example, the catcher may be able to help the pitcher to throw a pitch through the strike zone by working together using the trainer 10, 100. Moreover, batters who use the trainer 10, 100 will be able to visualize specific hitting zones, which may help to improve their batting performance. For umpires, the trainer 10, 100 is particularly useful because it may assist the umpire in identifying the strike zone more readily. Moreover, it may also help the umpire with proper positioning and stance while awaiting the pitch, because it may help the umpire to select a position and stance that ensures the umpire can visualize the entire strike zone.

[0084] With respect to coaches and batters, there is at least one additional advantage contemplated for the use of the trainer 10, 100. In particular, coaches may be able to assist batters to adjust their batting stance to adjust their individual strike zones. Batters may also benefit from this type of training. For example, a batter with a more vertical stance, and therefore a taller strike zone, may be encouraged to change their stance to reduce the size of the strike zone. Thereby, batters should be able to increase their competitive advantage on the playing field.

[0085] While the invention has been described with reference to several preferred embodiments, it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the spirit and scope of the present invention. In addition, many modifications may be made to adapt a particular situation, component, or material to the teachings of the present invention without departing from its teachings as claimed.